Trend Study 24R-1-03

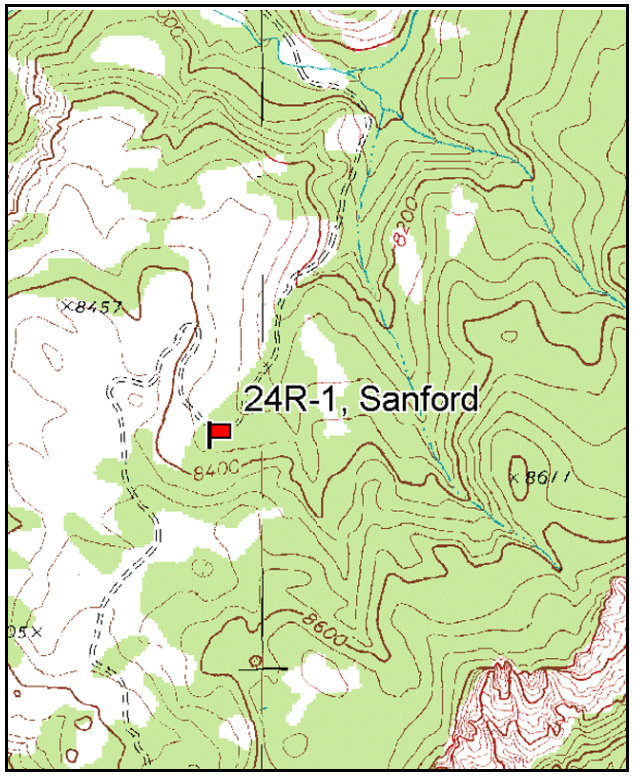
Study site name: Sanford . Vegetation type: Aspen-Conifer Burn .

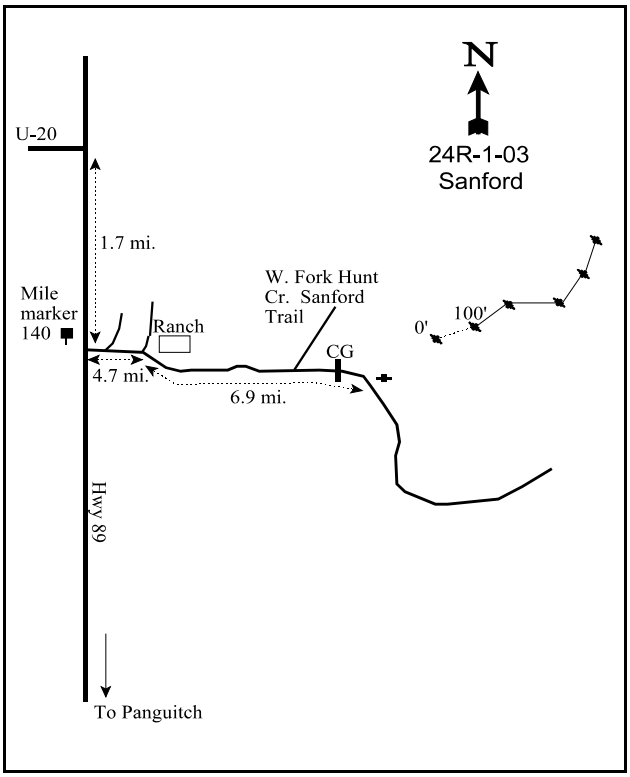
Compass bearing: frequency baseline 87 degrees magnetic (line 2, 74°M, line 3, 93°M, line 4, 68°M, line 5, 7°M).

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From the junction of highway 89 and U-20, travel south on highway 89 for 1.7 miles to a left turn. Travel 4.7 miles east keeping right at all forks until you come to a fork with a sign to Sanford Creek. Turn right at the fork. Travel 6.9 miles up Sanford Creek Canyon to the witness post on the left side of the road. You will cross the creek several times as you go up the canyon. Stay right at the fork part way up the canyon. The 0' stake is 27 paces at 185 degrees magnetic from the witness post. The 0' stake is a half-high steel post marked by browse tag #167 and the other stakes are rebar.





Map Name: Blind Spring Mtn

Diagrammatic Sketch

Township 33S , unsurveyed

GPS: NAD 27, UTM 12S 4197647 N, 390002 E

DISCUSSION

Sanford - Trend Study 24R-1

This trend study was established in 1998 up the right fork of Sanford Creek to monitor a prescribed burn which occurred in 2002. The site has an elevation of 8,390 feet with a north aspect and a slope of 12%. Prior to the burn the area was dominated by Douglas fir with small numbers of aspen. This site would be considered summer range for deer and elk, but pellet group data shows only light use. Pellet group data from 1998 estimated 17 deer days use/acre (41 ddu/ha) while elk use was estimated at less than 1 day use/acre (2 edu/ha). After the burn, deer use has declined 5 days use/acre (12 ddu/ha) in 2003. Elk use remained very low at less than 1 day use/acre (2 edu/ha). A few fresh cattle pats were seen in 2003, likely due to trespass livestock, but none occurred within the pellet group transect.

Soil at the site is deep with an effective rooting depth of 18.5 inches. There is little rock or pavement on the surface. Soil texture is a sandy loam which is strongly acidic (pH 5.4). Organic matter is high at nearly 5%. Prior to the burn, litter cover was abundant covering 94% of the ground surface with most being in the form of conifer needles. Little bare ground was exposed. After the burn, cover of bare ground increased to 26% and litter cover declined from 94% to 70%. In areas where the fire did not burn very hot, needle litter still covers the ground but soil is exposed in places were the fire burned hotter. Vegetation cover has declined from 33% to 7% and there is potential for severe erosion. However, at the time the study was reread on July 10th of 2003, erosion appeared minimal and the erosion condition class was determined to be stable.

The site was dominated by an overstory of Douglas fir prior to the burn. Shrub density strip data estimated a population of 1,440 trees/acre, 72% of which were young trees. Overhead canopy cover was estimated at 35%. Aspen was scattered through the site at a density of 680 trees/acre. Only 21%, or 140 trees/acre, were mature. Overhead canopy cover was variable but averaged 15% in 1998. Density of Douglas fir declined 6 fold to only 240 trees/acre after the fire. Dead Douglas fir was estimated at 1,140 trees/acre. Most of the surviving fir trees were located in an unburned area. Line intercept canopy cover averaged 5.4%. Aspen responded favorable to the fire with numerous aspen suckers sprouting after the burn. Density of aspen increased more than 3 fold from 680 to 2,220 plants/acre. Suckers were mostly unutilized. A few Ponderosa pine trees also occupy the site.

Understory shrubs included mountain common juniper, Oregon holly grape, Woods rose, and snowberry. All of these shrubs combined produced approximately 13% cover in 1998, with common juniper providing 41% of the understory shrub cover and snowberry accounting for an additional 38%. All species declined substantially in cover and density after the fire with the exception of Woods rose which dropped in average cover but remained similar in density. All of these shrubs did not appear to be utilized during either reading.

The herbaceous understory was poor prior to the burn with perennial grasses providing only about 3% total cover. The most abundant species were mountain brome, Kentucky bluegrass, and subalpine needlegrass. The forb composition was moderately diverse but total forb production was poor with forb cover estimated at only about 6% in 1998. The more common species included columbine, milkvetch, western yarrow, rose pussytoes, and dandelion. In 2003, the first growing season after the burn, perennial grasses and forbs were lacking. Total grass cover declined to less than 1%. The most abundant species was subalpine needlegrass. Individual grass plants were large and robust but spotty in their distribution. Some seeded grasses were encountered in small numbers. Total forb cover was estimated at less than 2%, and perennial forb cover was estimated at less than 1%. The most abundant forb found on the site in 2003 was Fremont goosefoot, an early seral annual, which made up 46% of the total forb cover. Herbaceous abundance and production will increase with time due to good site potential and the removal of the conifer overstory.

1998 APPARENT TREND ASSESSMENT

This site will be part of a prescribed burn. The site is currently dominated by Douglas fir with scattered aspen. Soil conditions appear stable with abundant litter cover from conifer needles. Erosion is low. The browse composition is composed of Douglas fir and aspen in the overstory with several shrubs found in the understory. One of the purposes of the prescribed burn is to rejuvenate aspen which is the key browse component of this site. The herbaceous understory is lacking and not particularly diverse considering the site potential. Production is also poor with total herbaceous cover estimated at only about 9%. This should also improve after the burn.

2003 TREND ASSESSMENT

This site was first read prior to a prescribed burn and reread during the first growing season after the burn. After the fire, the soil trend is down due to a reduction in protective ground cover. There is still adequate protective ground cover to prevent severe erosion and erosion on site is minimal at the present time. Trend for browse is slightly up with the improvement for aspen, the key species on this site. The goals of the prescribed burn treatment are being accomplished with the reduction of the Douglas fir overstory from an average cover value of 35% in 1998 to 5% in 2003. Remaining Douglas fir cover comes from an unburned area along the baseline. Total aspen cover declined from 15% in 1998 to about 5% in 2003, however, aspen density increased 69% after the fire from 680 plants/acre to 2,220 due to a flush of aspen suckers. Understory shrubs, mountain common juniper, Oregon hollygrape, and snowberry declined but these species are not key species, especially on summer range. Trend for the herbaceous understory is down due to a substantial decline in the sum of nested frequency of perennial grasses and forbs. Herbaceous plants are large and robust where found but are spotty in their distribution. The site was read during the first growing season after the fire and the herbaceous understory should improve in the future.

TREND ASSESSMENT
soil - down (1)
browse - slightly up (4)
herbaceous understory - down (1)

HERBACEOUS TRENDS --
Management unit 24R, Study no: 1

Type	Species	Nested Frequency '98	Nested Frequency '03	Average Cover % '98	Average Cover % '03
G	Bromus carinatus	$_{b}$67	$_{a}$-	1.77	-
G	Bromus inermis	-	2	-	.03
G	Carex spp.	3	-	.03	-
G	Dactylis glomerata	$_{b}$20	$_{a}$-	.28	-
G	Festuca ovina	8	-	.03	-
G	Poa fendleriana	-	6	-	.01
G	Poa pratensis	$_{b}$36	$_{a}$2	.32	.03
G	Secale montanum	$_{a}$-	$_{b}$22	-	.32
G	Stipa columbiana	$_{b}$40	$_{a}$28	.42	.41

Type	Species	Nested Frequency		Average Cover %	
		'98	'03	'98	'03
G	Stipa lettermani	11	-	.01	-
Total for Annual Grasses		0	0	0	0
Total for Perennial Grasses		185	60	2.89	0.81
Total for Grasses		185	60	2.89	0.81
F	Achillea millefolium	$_{b}$35	$_{a}$6	.87	.07
F	Antennaria rosea	$_{b}$35	$_{a}$3	1.25	.06
F	Androsace septentrionalis (a)	4	11	.01	.05
F	Aquilegia caerulea	$_{b}$52	$_{a}$-	1.48	-
F	Arabis spp.	3	-	.00	-
F	Arenaria fendleri	$_{b}$14	$_{a}$-	.10	-
F	Astragalus spp.	$_{b}$33	$_{a}$6	.95	.07
F	Castilleja spp.	2	-	.03	-
F	Chenopodium fremontii (a)	$_{a}$-	$_{b}$31	-	.79
F	Collomia linearis (a)	-	7	-	.04
F	Erigeron eatonii	21	11	.22	.07
F	Fragaria virginiana	2	6	.03	.05
F	Geranium spp.	3	-	.03	-
F	Lotus utahensis	3	-	.00	-
F	Lupinus argenteus	3	-	.03	-
F	Orthocarpus luteus (a)	1	-	.00	-
F	Polygonum douglasii (a)	5	13	.01	.10
F	Potentilla spp.	5	-	.04	-
F	Taraxacum officinale	$_{b}$33	$_{a}$9	.65	.21
F	Thalictrum fendleri	-	2	-	.15
F	Tragopogon dubius	4	-	.03	-
F	Viola spp.	10	2	.12	.03
Total for Annual Forbs		10	62	0.02	0.99
Total for Perennial Forbs		258	45	5.88	0.72
Total for Forbs		268	107	5.90	1.71

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 24R, Study no: 1

Type	Species	Strip Frequency		Average Cover %	
		'98	'03	'98	'03
B	Juniperus communis	13	0	5.31	-
B	Mahonia repens	25	12	2.38	.36
B	Pinus ponderosa	2	1	.15	-
B	Populus tremuloides	19	43	.24	1.62
B	Pseudotsuga menziesii	48	5	9.44	.64
B	Rosa woodsii	5	6	.41	.03
B	Symphoricarpos oreophilus	75	21	4.86	.84
Total for Browse		187	88	22.81	3.49

CANOPY COVER, LINE INTERCEPT --
Management unit 24R, Study no: 1

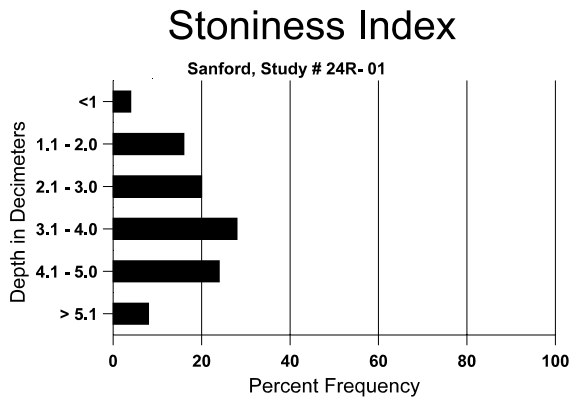
Species	Percent Cover	
	'98	'03
Mahonia repens	-	.16
Pinus ponderosa	-	2.00
Populus tremuloides	15.19	4.81
Pseudotsuga menziesii	35.20	5.44
Rosa woodsii	-	.08
Symphoricarpos oreophilus	-	.60

BASIC COVER --
Management unit 24R, Study no: 1

Cover Type	Average Cover %	
	'98	'03
Vegetation	33.26	6.65
Rock	.22	.67
Pavement	.01	.01
Litter	94.35	69.68
Cryptogams	.22	.00
Bare Ground	.19	26.14

SOIL ANALYSIS DATA --
Management unit 24R, Study no: 1, Study Name: Sanford

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
18.5	56.3 (17.7)	5.4	58.0	23.4	18.6	4.9	20.9	425.6	0.9



PELLET GROUP DATA --
Management unit 24R, Study no: 1

Type	Quadrat Frequency '98	Quadrat Frequency '03	Days use per acre (ha) '98	Days use per acre (ha) '03
Deer	1	3	17 (42)	5 (12)
Elk	-	-	1 (2)	1 (2)
Cattle	2	-	-	-

BROWSE CHARACTERISTICS --
Management unit 24R, Study no: 1

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Juniperus communis											
98	**760**	-	80	660	20	-	0	0	3	11	24/32
03	**0**	-	-	-	-	-	0	0	0	0	-/-
Mahonia repens											
98	**4740**	-	620	4120	-	-	3	0	-	0	6/9
03	**1820**	-	920	900	-	-	0	0	-	0	4/6
Pinus ponderosa											
98	**60**	20	40	20	-	-	0	0	-	0	-/-
03	**20**	-	-	20	-	-	0	0	-	0	-/-

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Populus tremuloides											
98	**680**	-	540	140	-	60	0	0	-	0	-/-
03	**2220**	-	2220	-	-	200	0	0	-	0	19/13
Pseudotsuga menziesii											
98	**1440**	280	1040	400	-	120	0	0	0	0	-/-
03	**240**	20	180	40	20	1140	0	0	8	17	-/-
Rosa woodsii											
98	**220**	-	160	60	-	-	0	0	-	0	20/23
03	**240**	20	140	100	-	-	0	0	-	0	4/4
Symphoricarpos oreophilus											
98	**6060**	260	2360	3700	-	-	0	0	-	0	14/15
03	**940**	-	720	220	-	-	0	0	-	0	11/19